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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/533,383

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Johannes Antonius Maria Reinders

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EXAMINER

FLANIGAN, ALLEN J

ART UNIT

PAPER NUMBER

3744

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary**Application No.**

10/533,383

Applicant(s)REINDERS, JOHANNES
ANTONIUS MARIA**Examiner**

Allen J. Flanigan

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 June 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-6, 10-14, 16-18 and 20-24 is/are pending in the application.
- 4a) Of the above claim(s) 13, 14, 16-18 and 20 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-6, 10-12 and 21-24 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date: _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date: _____ | 6) <input type="checkbox"/> Other: _____ |

Claims 13, 14, 16-18, and 20 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention or species, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on 6/30/2008.

Claims 3 and 6 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claim 3, a broad range or limitation together with a narrow range or limitation that falls within the broad range or limitation (in the same claim) is considered indefinite, since the resulting claim does not clearly set forth the metes and bounds of the patent protection desired. See MPEP § 2173.05(c). Note the explanation given by the Board of Patent Appeals and Interferences in *Ex parte Wu*, 10 USPQ2d 2031, 2033 (Bd. Pat. App. & Inter. 1989), as to where broad language is followed by "such as" and then narrow language. The Board stated that this can render a claim indefinite by raising a question or doubt as to whether the feature introduced by such language is (a) merely exemplary of the remainder of the claim, and therefore not required, or (b) a required feature of the claims. Note also, for example, the decisions of *Ex parte Steigewald*, 131 USPQ 74 (Bd. App. 1961); *Ex parte Hall*, 83 USPQ 38 (Bd. App. 1948); and *Ex parte Hasche*, 86 USPQ 481 (Bd. App. 1949). In the present instance, claim 3 recites the broad recitation "a thickness of between

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25 microns and 120 microns”, and the claim also recites “preferably around 70 microns”, which is the narrower statement of the range/limitation.

Regarding claim 6, this claim recites that “the water retaining layer is provided on only one surface of **the fins**” (emphasis added). Since a plurality of fins are claimed, it is not clear whether the above limitation is meant to require the claimed layer be present on a single surface of the entirety of the recited plurality fins, or on a single surface of *each* of the recited plurality.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-6, 10, 11, 21, 23, and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yasutake et al. in view of Lamich.

Yasutake et al. show a heat exchanger construction with internal and external fins provided on plate members 2 that separate the fluids exchanging heat (Figs. 1, 2). Further, in a variation shown in Fig. 17, a moisture retaining porous layer 39 is formed on the internal fins. The plates, as well as the fins, are disclosed as being formed of a clad brazing sheet that permits furnace brazing. Such sheets, clad with heat fusible filler, are well known in the art. The laminate sheets 2 are joined to each other via spacers 9, 12 to form flow passages. Thus, the only limitation of claim 1 that Yasutake et al. lacks is the

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corrugated form of the fin structure 11. Lamich shows that it is known to provide internal fins for heat exchanger passages that are corrugated for both fluids (see Fig. 4), and it would have been obvious to one of ordinary skill in the art at the time the instant invention was made to substitute the corrugated fin structure shown in Lamich et al. for the fin structure of spacer 8 shown in Yasutake et al.

Regarding claim 3, although Yasutake et al. do not indicate any preferred thickness for the plates 2 that separate the fluids, it is known in the art that the wall thickness of heat exchanger plates or tube walls is a result effective variable; the goal is typically to make the wall thickness as small as possible without compromising structural integrity, corrosion and impact resistance, etc. (since the thicker the wall, the more heat conduction across the wall is impeded). Lamich indicate that the strips forming the heat passages are “typically 0.15-0.20 mm¹ in thickness”. Such “braze clad aluminum” would inherently have a thickness of the core aluminum layer (minus the clad layer on both sides) near or within the claimed range; even if such were not the case, it would have been obvious to one of ordinary skill in the art at the time the instant invention was made to optimize the wall thickness of Yasutake et al. for a given application. See MPEP 2144.05 (II).

Regarding claim 6, it is believed that the claimed “one surface of the fins” is readable, for example, on the one and only outside surface that any fin

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structure will have (the claims, it is noted, do not explicitly recite that the corrugated fins are provided with opposed first and second surfaces on opposite sides of the corrugated sheet from which they are formed).

Regarding claim 10, the aluminum brazing sheets referred to in Yasutake et al. typically have a braze clad applied to both surfaces of the sheet; this is confirmed by the suggestion in Yasutake et al. that an alternative to such clad sheets is to use “aluminum panels each having a brazing material applied to its upper and lower surfaces by a brush or the like” (bottom of column 3).

Regarding the “folded” limitation of claim 21, note the embodiment of Figs. 10-15 of Lamich, showing various configurations incorporating a folded component in the tube enclosing a corrugated internal fin.

Regarding claims 23 and 24, the use of louvers on corrugated fins is well known in the art as shown by Yasutake et al. (note Fig. 11 showing louvers 14), and to provide such on any corrugated fins employed in a heat exchanger construction would have been obvious to one of ordinary skill in the art.

Claim 22 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yasutake et al. in view of Lamich as applied to claim 21 above, and further in view of Sakai.

Sakai show a wettable/hydrophilic layer formed of nonwoven fibers disposed on fins. It would have been obvious to one of ordinary skill in the art at the time the instant invention was made to substitute this hydrophilic layer

¹ 150-200 microns

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for the porous layer 39 of Yasutake et al., such being no more than the substitution of one porous/wettable layer for another.

Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yasutake et al. in view of Lamich as applied to claim 11 above, and further in view of Takai et al.

Takai et al. show that it is known to form flow passages with an enclosed corrugated fin by folding a single strip and joining the edges (rather than a two piece construction as shown in Lamich), and it would have been obvious to one of ordinary skill in the art at the time the instant invention was made to form the passages of Yasutake et al. as modified above to include an corrugated internal fin in this manner, such being a mere substitution of one known tube construction for another.

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

The remaining references concern heat exchangers employing corrugate fins and/or porous layers provided on fins.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Allen J. Flanigan whose telephone number is (571) 272-4910. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cheryl Tyler can be reached on (571) 272-4834. The fax

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phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Allen J. Flanigan/
Primary Examiner, Art Unit 3744